

WHAT IS CLAIMED IS:

1. A message processor for implementing a process by communicating a message with an external device, the message processor comprising:

message generating means including at least one of message receiving means to receive the message from the external device, and message creating means to create the message;

message storing means to store the message received or created by the message generating means;

message processing means to read out the message stored in the message storing means and to implement a process based on the message;

identification code attaching means to record, in the message storing means, the message processed by the message processing means with an identification code indicating that the message has been processed being attached thereto;

discrimination database storing means to store a database describing an effective term with respect to each of contents of the message; and

message discriminating means to read out the message from the message storing means in response to a restart signal received in the message processor after the operation of the message processor is suspended, and to cause the message processing means to implement the process with respect to the message to which the identification code has not been attached and whose effective term has not lapsed, among the readout message, by referring to the database.

2. The message processor according to Claim 1, wherein:

the message generating means includes the message creating means;

the database further describes whether the message is to be recreated after lapse of the effective term with respect to each of the contents of the message created by the message creating means; and

the message discriminating means causes the message creating means to recreate the message to which the identification code has not been attached, whose effective term has lapsed and which is to be recreated, among the message read out from the message storing means in response to the restart signal by referring to the database.

3. An apparatus controlling device provided with a controlling section for controlling an apparatus by communicating a message with an external device via a communications line, and a communicating section which is provided between the controlling section and the communications line, and is adapted for performing protocol conversion of the message so as to interface with the controlling section and the communications line, wherein

the communicating section includes:

message receiving means to receive a first message sent through the communications line and a second message sent from the controlling section;

message storing means to store the first message and the second message received by the message receiving means;

message processing means to read out the first message and the second message stored in the message storing means, to send the readout first message to the controlling section, and to send the readout second message to the communications line;

identification code attaching means to record, in the message storing means, the first message and the second message after the transmission by the message processing means, with the identification code indicating that the respective first and second messages have been processed being attached thereto;

discrimination database storing means to store a database describing an effective term with respect to each of contents of the first message and the second message; and

message discriminating means to read out the first message and the second message from the message storing means in response to a restart signal received in the communicating section after the operation of the communicating section is suspended, and to cause the message processing means to send the message to which the identification code has not been attached and whose effective term has not lapsed, among the readout first and second messages, by referring to the database.

4. The apparatus controlling device according to Claim 3, wherein:
the communicating section further includes message creating means to create a third message;

the message storing means stores the third message created by the message creating means;

the message processing means reads out the third message stored in the message storing means, sends the readout third message to the communications line, sends, to the controlling section, the readout first message except for one containing a data request to the controlling section, and causes the message creating means to create the third message responding to the first message

containing the data request;

identification code attaching means records, in the message storing means, the third message after the transmission by the message processing means, with the identification code indicating that the third message has been processed being attached thereto;

the database describes an effective term with respect to each of contents of the third message;

the message discriminating means reads out the third message from the message storing means in response to the restart signal, and causes the message processing means to send the message to which the identification code has not been attached and whose effective term has not lapsed, among the readout third message, by referring to the database; and

the controlling section sends, to the communicating section, data required for the message creating section to create the third message responding to the data request contained by the first message.

5. The apparatus controlling device according to Claim 4, wherein the database further describes whether the third message is to be recreated after lapse of the effective term with respect to each of the contents of the third message;

the message discriminating means causes the message creating means to recreate the third message to which the identification code has not been attached, whose effective term has lapsed, and which is to be recreated, among the third message read out from the message storing means in response to the restart signal by referring to the database; and

the controlling section sends, to the communicating section, data required for the message creating section to recreate the third message after the operation of the communicating section is resumed in response to the restart signal.

6. The apparatus controlling device according to Claim 5, wherein the database further describes whether the second message is to be recreated after lapse of the effective term with respect to each of the contents of the second message;

message discriminating means causes the message creating means to recreate the second message to which the identification code has not been attached, whose effective term has lapsed and which is to be recreated, as the third message, among the second message read out from the message storing means in response to the restart signal by referring to the database; and

the controlling section sends, to the communicating section, data required for the message creating section to recreate the second message as the third message after the operation of the communicating section is resumed in response to the restart signal.

7. The apparatus controlling device according to Claim 3, wherein the controlling section monitors the operation of the communicating section, and sends the restart signal to the communicating section if the operation of the communicating section is suspended.

8. An apparatus controlling device provided with a controlling section for controlling an apparatus by communicating a message with an external

device via a communications line, and a communicating section which is provided between the controlling section and the communications line, and is adapted for performing protocol conversion of the message so as to interface with the controlling section and the communications line, wherein

the controlling section includes:

message receiving means to receive a first message sent from the communicating section;

message creating means to create a second message;

message storing means to store the first message received by the message receiving means, and the second message created by the message creating means;

message processing means to read out the first message and the second message stored in the message storing means, to control the apparatus based on the readout first message, and to send the readout second message to the communicating section;

identification code attaching means to record, in the message storing means, the first message after the control by the message processing section and the second message after the transmission by the message processing means, with an identification code indicating that the respective and second messages have been processed being attached thereto;

discrimination database storing means to store a database describing an effective term with respect to each of contents of the first message and the second message; and

message discriminating means to read out the first message and the second message from the message storing means in response to a restart signal

received in the controlling section after the operation of the communicating section is suspended, and to cause the message processing means to carry out the control or the transmission with respect to the message to which the identification code has not been attached and whose effective term has not lapsed, among the readout first and second messages, by referring to the database.

9. The apparatus controlling device according to Claim 8, wherein the database further describes whether the second message is to be recreated after lapse of the effective term with respect to each of the contents of the second message;

the message discriminating means reads out the second message from the message storing means in response to the restart signal, and causes the message creating means to recreate the second message to which the identification code has not been attached, whose effective term has lapsed and which is to be recreated, among the readout second message by referring to the database.

10. The apparatus controlling device according to Claim 8, wherein the communicating section monitors the operation of the controlling section, and sends the restart signal to the controlling section if the operation of the controlling section is suspended.

11. A home appliance comprising the message processor of Claim 1.

12. A program for a message processor of implementing a process by communicating a message with an external device, the program causing the

message processor to function as:

message generating means including at least one of message receiving means to receive the message from the external device, and message creating means to create the message;

message storing means to store the message received or created by the message generating means;

message processing means to read out the message stored in the message storing means, and to implement a process based on the message;

identification code attaching means to record the message processed by the message processing means, in the message storing means, with an identification code indicating that the message has been processed being attached thereto;

discrimination database storing means to store a database describing an effective term with respect to each of contents of the message; and

message discriminating means to read out the message from the message storing means in response to a restart signal received in the message processor after the operation of the message processor is suspended, and to cause the message processing means to implement the process with respect to the message to which the identification code has not been attached and whose effective term has not lapsed, among the readout message, by referring to the database.

13. A program product comprising the program according to Claim 12, and a holding medium to hold the program therein.

14. The program product according to Claim 13, wherein the holding medium is at least one of a storage medium and a transmission medium.

15. A microcomputer system provided with a plurality of microcomputers for communicating a message with each other, and a log memory from and into which data is readable and writable by the any one of the microcomputers, the microcomputer system comprising:

a first microcomputer, as the one of the microcomputers, including:

message creating means to create the message;

message sending means to send the message created by the message creating means to a second microcomputer, as the another one of the microcomputers;

first message writing means to record the message sent by the message sending means in the log memory;

a first database memory to store a first database describing an effective term with respect to each of contents of the message,

the second microcomputer including:

message processing means to process the message sent by the message sending means depending on the contents of the message;

identification code attaching means to record, in the log memory, the message which has been recorded in the log memory and whose process by the message processing means has been completed, with a first identification code indicating that the message has been processed being attached thereto;

a second database memory to store a second database describing an effective term with respect to each of contents of the message; and

first message discriminating means to read out the message from the log memory in response to a restart signal received in the second

microcomputer after the operation of the second microcomputer is suspended, and to cause the message processing means to process the message to which the first identification code has not been attached and whose effective term has not lapsed, among the readout message, by referring to the second database,

the first microcomputer further including second message discriminating means to read out the message from the log memory after the second microcomputer receives the restart signal, and to cause the message creating means to recreate the message to which the first identification code has not been attached and whose effective term has lapsed, among the message read out from the log memory, by referring to the first database.

16. The microcomputer system according to Claim 15, wherein:

the first database further describes whether the message is to be recreated after lapse of the effective term with respect to each of the contents of the message; and

the second message discriminating means causes the message creating means to recreate the message to which the first identification code has not been attached, whose effective term has lapsed and which is to be recreated, among the message read out from the log memory by referring to the first database.

17. The microcomputer system according to Claim 16, wherein the second message discriminating means causes the message sending means to send the message to which the first identification code has not been attached, whose effective term has lapsed and which is not to be recreated, among the message read out from the log memory.

18. The microcomputer system according to Claim 15, wherein the first microcomputer further includes:

second message writing means records the message created by the message creating means in the log memory; and

the first message writing means to record, in the log memory, the message which has been recorded by the second message writing means and whose transmission by the message sending means has been completed, with a second identification code indicating that the message has been processed being attached thereto,

the first microcomputer further includes:

third message discriminating means to read out the message from the log memory in response to a restart signal received in the first microcomputer after the operation of the first microcomputer is suspended, to cause the message sending means to send the message to which the second identification code has not been attached and whose effective term has not lapsed, among the message read out from the log memory, by referring to the first database, and to cause the message creating means to recreate the message to which the second identification code has not been attached and whose effective term has lapsed.

19. The microcomputer system according to Claim 18, wherein:

the first database further describes whether the message is to be recreated after lapse of the effective term with respect to each of the contents of the message; and

the third message discriminating means causes the message creating

means to recreate the message to which the second identification code has not been attached, whose effective term has lapsed and which is to be recreated, among the message read out from the log memory by referring to the first database.

20. The microcomputer system according to Claim 19, wherein the third message discriminating means causes the message sending means to send the message to which the second identification code has not been attached, whose effective term has lapsed and which is not to be recreated, among the message read out from the log memory.

21. The microcomputer system according to Claim 15, wherein:
the microcomputers include a master microcomputer, and a plurality of sub microcomputers for communicating the message with each other, communication of the message between the sub microcomputers being conducted via the master microcomputer;

the first microcomputer is the one of the sub microcomputers; and
the second microcomputer is the master microcomputer.

22. The microcomputer system according to Claim 15, wherein:
the microcomputers include a master microcomputer, and a plurality of sub microcomputers for communicating the message with each other, communication of the message between the sub microcomputers being conducted via the master microcomputer;

the first microcomputer is the one of the sub microcomputers; and
the second microcomputer is the another one of the sub microcomputers.

23. The microcomputer system according to Claim 21, wherein at least one of the sub microcomputers monitors the operation of the master microcomputer, and sends the restart signal to the master microcomputer if the operation of the master microcomputer is suspended.

24. The microcomputer system according to Claim 22, wherein at least one of the sub microcomputers monitors the operation of the master microcomputer, and sends the restart signal to the master microcomputer if the operation of the master microcomputer is suspended.

25. The microcomputer system according to Claim 21, wherein the master microcomputer monitors the operations of the sub microcomputers, and, if the operation of the one of the sub microcomputers is suspended , sends the restart signal to the operation-suspended sub microcomputer.

26. The microcomputer system according to Claim 22, wherein the master microcomputer monitors the operations of the sub microcomputers, and, if the operation of the one of the sub microcomputers is suspended , sends the restart signal to the operation-suspended sub microcomputer.

27. A home appliance comprising the microcomputer system according to Claim 15.

28. A program for a microcomputer system provided with a plurality of microcomputers for communicating a message with each other, and a log memory from and into which data is readable and writable by the any one of the microcomputers, wherein:

the program causes a first microcomputer, as the one of the microcomputers, to function as:

message creating means to create the message;

message sending means to send the message created by the message creating means to a second microcomputer, as the another one of the microcomputers;

first message writing means to record the message sent by the message sending mean in the log memory; and

a first database memory storing a first database describing an effective term with respect to each of contents of the message;

the program causes the second microcomputer to function as:

message processing means to process the message sent by the message sending means depending on the contents of the message;

identification code attaching means to record, in the log memory, the message which has been recorded in the log memory and whose process by the message processing means has been completed, with a first identification code indicating that the message has been processed being attached thereto;

a second database memory storing a second database describing an effective term with respect to each of the contents of the message; and

first message discriminating means to read out the message from the log memory in response to a restart signal received in the second

microcomputer after the operation of the second microcomputer is suspended, and to cause the message processing means to process the message to which the first identification code has not been attached and whose effective term has not lapsed, among the readout message, by referring to the second database,

the program further causes the first microcomputer to function as second message discriminating means to read out the message from the log memory after the second microcomputer receives the restart signal, and to cause the message creating means to recreate the message to which the first identification code has not been attached and whose effective term has lapsed, among the readout message, by referring to the first database.

29. A program product comprising the program according to Claim 28, and a holding medium to hold the program therein.

30. The program product according to Claim 29, wherein the holding medium is at least one of a storage medium and a transmission medium.